

ENVIRONMENT, SAFETY AND HEALTH ONSITE TECHNICAL ASSISTANCE ACTIVITY SUMMARY JANUARY-MARCH 1997



During this quarter, efforts to apply Enhanced Work Planning (EWP) elements to a broad variety of activities in diverse settings continued to make substantial progress in improving work planning and control throughout the DOE complex. Efforts to institutionalize EWP and extend successes attained during demonstration projects across all site activities continued at Hanford, Idaho, Oak Ridge, Mound, Fernald, Savannah River, Los Alamos, and Pantex. A new demonstration effort was initiated at Rocky Flats during this reporting period. In addition, representatives from the Office of Environment, Safety and Health (EH) met with management and staff at the Brookhaven National Laboratory to discuss potential application of EWP elements to work planning and control activities at these two sites.

Representatives from EWP projects at DOE sites across the nation gathered for a workshop in Augusta, Georgia, in February to exchange information on successes achieved to date, discuss future directions of EWP efforts, and establish a more permanent infrastructure to support further expansion of EWP across the DOE complex. Participants agreed to establish a national EWP Steering Committee with representation from numerous DOE sites, including both contractor staff and DOE Field and Operations Office staff as well as representatives from EH Headquarters. Participants also worked together to develop a consistent understanding of EWP elements and goals and objectives for future efforts to promote EWP. Representatives from numerous EWP sitewide implementation projects developed a common approach for training personnel on applying EWP elements. The effort focused on determining what knowledge different levels of personnel need about EWP in order to implement enhanced work planning and control systems and on developing generic curricula, including learning objectives, and course content. Efforts focused on developing the framework for two courses, one for craft workers, technicians, and operators, and one for supervisors and managers. During the second quarter, efforts to develop and test these classes will continue.

EWP projects at the Idaho Site continued to contribute to improvements in safety, efficiency, and productivity during the first quarter. The Sitewide Asbestos Program EWP Team developed several enhancements that will be implemented to improve work that involves potential exposure to asbestos. These initiatives include marking piping flanges to verify that gaskets used in the connection are asbestos free; developing procedures for individuals to complete selected small-scale, short-duration tasks involving exposure to asbestos hazards, and developing an asbestos planning decision tree to help improve planning for jobs that may involve asbestos hazards.

Based on successes from the EWP demonstration project at the Idaho Chemical Processing Plant, efforts are underway to implement the elements of EWP across the entire Idaho National Engineering and Environmental Laboratory (INEEL). A sitewide EWP Directorate Steering Committee representing a cross section of organizations has been established. The Directorate Steering Committee agreed to consolidate efforts to improve work management processes with the Compliance Reengineering Maintenance Team. This will preclude duplication of efforts and conserve resources. The EWP Working Team, which supports the Directorate Steering Committee, will develop a standardized, common work control process for the entire site that will improve safety and efficiency while improving work management across the site.

Fernald's Sitewide EWP Implementation Guide, which provides overall direction on how to use EWP as a tool to improve work management, was issued through the site procedure system. In addition, planning and execution of waste management activities has improved significantly as a result of Waste Programs' new EWP-based task order procedure. Testing was completed on the new automated worker exposure reporting system, which provides an electronic mechanism to retrieve information about employee exposures to workplace hazards. The new system was approved and accepted by Fernald's Medical Department.

Another highlight of this quarter's activities was a presentation on the elements of EWP by the Fernald EWP Department at a local college. The audience consisted of students in the business management class and management personnel from private industry responsible for planning and implementing work processes. This presentation provided a unique opportunity to transfer technology to private industry.

The EWP initiative at Mound is being expanded to encompass all work activities at the

site. During the first quarter of 1997, efforts focused on improving maintenance work planning and control and reengineering work planning and control in waste management and environmental restoration. Mound is considering creating an EWP Advisory Council to provide guidance and oversight on developing a sitewide strategy for implementing EWP. Within the maintenance area, management began using delay codes to track the causes of delays in maintenance work. This information will be used to develop corrective actions that help to expedite completion of work.

Efforts to implement EWP sitewide at the Hanford Site were linked to two other broad initiatives during the first quarter. Efforts to develop the Hanford Occupational Health Process in order to establish a risk-based and preventive approach to occupational health continued as the employee job task analysis tool became available sitewide. The site's integrating contractor began providing training to line managers and industrial hygienists on use of the system, and this training, along with initial implementation of the overall process, will continue through the second quarter.

EWP projects continued to produce impressive results at multiple facilities at the Hanford Site. At K Basins, EWP efforts continued to support improvements relating to conduct of operations and controlling the scheduling of work. Use of weekly schedules and effective control of emergent work have produced a dramatic improvement in completion of scheduled work from 68 percent to 90 percent in just one quarter.

The EWP initiative at the Plutonium Finishing Plant is dramatically improving operations. A formal maintenance schedule has been developed for all work to be completed in April, representing a significant improvement in control of work at the facility. The facility is

also using systematic approaches to identify work that can be completed under general-use work orders instead of more formal planned work packages, resulting in significant savings in resources associated with preparation and review of the formal work packages and expediting the accomplishment of work.

The Pantex Plant expanded its use of EWP elements to several additional projects during the first quarter of 1997. Four specific additional projects where EWP elements are being applied include efforts to eliminate delays associated with movement of stock materials to the work area, decontamination of a specific facility, improvement of reliability of missioncritical equipment and facilities to reduce maintenance-related downtime, and application of structured processes to expedite completion of minor work orders that can be completed within the skill of the craft. The site has established a central EWP core team to coordinate EWP efforts and to promote effective interface between various projects, senior facility management, DOE, and the employee unions.

The Rocky Flats Field Office, the integrating contractor, and two subcontractors at the Rocky Flats Environmental Technology Site initiated three new demonstration projects at the site during the first quarter. The projects involve cleanup and removal of chemically contaminated soil, decontamination and decommissioning of a uranium and beryllium fabrication building, and increasing the efficiency and productivity of electrical maintenance in an analytical services laboratory. Project working teams that include craft labor, planners, engineers, and safety and health specialists have been formed to help conduct each demonstration project. Criteria and procedures developed at the Hanford Site for defining and controlling work that can be performed within skill of the craft with substantial savings in effort required to develop formal work control and planning are being evaluated for adaptation and use at Rocky Flats.

Efforts to develop and implement a sitewide work control system at the Los Alamos National Laboratory continued during the first quarter. A new work control requirements document was finalized and issued along with a revised maintenance zone work control procedure that establishes a uniform process for approval of work requests. Development of the electronic work request system that improves hazard analysis screening, identification of detailed site hazards, and determination of appropriate mitigation actions also continued during the first quarter.

During this quarter, EH Mentors completed their efforts to support the Fernald Environmental Management Project in developing a report on radiological control optimization. This effort entailed a critical evaluation of radiological control practices, use of personal protective equipment (including respiratory protection), application of engineering controls, and work management. The study focused on potential reductions in total risk to the workforce. An important additional benefit from implementing recommendations in the study are cost savings associated with improving operational and work management practices.

During the first quarter, efforts to establish EWP at the Y-12 Project and the East Tennessee Technology Park (formerly K-25) focused on establishing four EWP subteams assigned to improve work control, automated planning and permitting, integration of EWP with other initiatives, and performance measures. Key activities of the teams include baselining work control processes and identifying how application of EWP elements can result in significant process improvements. In

addition, new software based on the Hanford job hazard analysis program and the Idaho job requirements checklist is expected to improve job hazard analysis processes at Oak Ridge.

During the first quarter, the Savannah River Site's EWP project supporting waste minimization activities was expanded across the entire site, and results were shared with the DOE complex. The Rollback Handbook developed during the project to provide guidance for decreasing contaminated areas was distributed throughout DOE. A sitewide implementation plan was developed using a computerized economic model to optimize selection of potential rollback projects. The rollback process has produced a permanent improvement in work planning processes and management within the Nuclear Materials Stabilization and Storage Facility at Savannah River. In addition, Savannah River has begun its study of possible improvements in managing contaminated tools, benchmarking site processes and comparing them with those used at the River Bend Nuclear Power Plant, which has been recognized by the Institute for Nuclear Power Operations as "best in class."

EH's Leadership Development Program continued to expand at the Hanford Site during the first quarter. An additional pilot session of the Leadership Development Program was completed at the Plutonium Finishing Plant in January. Two additional groups are participating in the program at the Hanford Analytical Services Laboratory. New sessions were started for the maintenance group at the B-Plant, including craft, exempt, and nonexempt workers. In addition, program managers and Facility Representatives from the Richland Operations Office are also participating in the Surveys indicate that participants effort. believe that they are more efficient as a result of the training sessions. Based on results of the surveys, individuals who participate in the training may recover as much as 3 hours a day of discretionary time as a result of improved efficiency.

EH continued its initiative to support improvements in self-assessment performance during the first quarter. Discussions are in progress with the Ohio Field Office, the Idaho Operations Office, and the Richland Operations Office on the scope of possible field demonstration projects to test the effectiveness of specific improvements in self-assessment programs. These field projects will focus on increasing worker involvement in self-assessment activities and on improving the ways in which management uses results from selfassessment activities. EH staff met with the Department Standards Committee to discuss results of the benchmarking study completed last year. EH will work with the committee during the demonstration projects to share information on successes and lessons learned.#

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ENHANCED WORK PLANNING

STEERING COMMITTEE

The EWP Steering committee has been solidly established, with participation from every active EWP site. This committee is a direct result of the quest of EWP leaders from sites across the complex for effective methods to promote institutionalization of EWP. During the core team leaders meeting last February at Savannah River, the group agreed on the need for a steering committee for the EWP initiative. As EWP expanded across the DOE complex and throughout the various facilities and projects at those sites, the need for a more formalized approach to networking and procuring Headquarters' support became apparent. The EWP Steering Committee was established with a six-fold purpose: (1) to ensure that the definition of EWP and its key elements are understood and applied; (2) to promote a complexwide movement toward a consistent approach to the control of work; (3) to support the institutionalization and expansion of EWP throughout the DOE complex; (4) to provide an avenue for DOE sites to communicate, network, and share lessons learned, products, systems, and implementation ideas to improve ongoing EWP efforts; (5) to incorporate best practices as a means of identifying effective private-sector processes against which DOE projects can be benchmarked for continuous improve of EWP site programs; and (6) to assist in integrating EWP with other DOE programs and initiatives.

The EWP Steering Committee is composed of Federal and site contractor representatives from DOE facilities participating in recognized EWP programs. A representative of the DOE Office of Environment, Safety and Health (EH) serves as Chair of the steering committee, and as many as three members from each participating site are appointed by the DOE

field office and operating contractor. Membership is voluntary; therefore, each organization provides funding for the participation of its members.

The Chair of the EWP Steering Committee is responsible for providing leadership and support to the committee; working with DOE Headquarters management (EH, the Office of Environmental Management, and the Office of Defense Programs) to garner support and promote EWP complexwide; establishing methods of communication concerning EWP in the DOE complex (e.g., workshops, biweekly conference calls, home page); establishing format and content for required reports; producing and distributing quarterly EWP reports; and establishing forums to support and promote the EWP process throughout DOE.

Each committee member is responsible for being active in providing the rest of the committee and the Chair with an updated description of the EWP initiative from the facility being represented; providing biweekly status reports as directed by the Chair; providing quarterly reports to the Chair that highlight program or initiative successes, lessons learned, performance measures, and paths forward; participating in biweekly conference calls; actively and openly supporting and promoting EWP initiatives at other DOE sites; contributing to the development of a standardized EWP training program; supporting the Chair, as required and agreed on to promote the EWP program complexwide; participating in and contributing to the lessons learned process and the exchange of information, tools, and implementation strategies; participating, where possible, in EWP core team leaders meetings; participating in the decision-making process for the allocation of support to EWP programs complexwide; coordinating the integration of EWP into other DOE-wide initiatives such as integrated safety management, the Voluntary Protection Program, and self-assessment; and networking with sites in the initial stages of EWP implementation or interested in learning more about EWP.

The first success of the steering committee was the development, complexwide communication, and consensus of a clear definition of EWP—a process that evaluates and improves the method by which work is identified, planned, approved, controlled, and executed. The key elements of EWP are (1) a graded approach to work management based on risk and complexity; (2) organizationally diverse teams; (3) organized, institutionalized communication; (4) line management ownership; and (5) worker involvement beginning at the earliest phases of work management.

Other action items being addressed by the steering committee are (1) developing a standardized EWP curriculum, which will be available to all sites interested in implementing EWP; (2) developing performance measures for EWP programs complexwide for inclusion in DOE's environment, safety, and health corporate performance indicators; (3) compiling an accurate history of EWP from both Headquarters and the field's perspective; (4) updating the status of EWP projects, including adding to or revising the current metrics on the successes; and (5) focusing on sharing tools and lessons learned by updating the crosspollination document to meet the needs of the sites more adequately and by providing access to EWP tools developed at each site.

The cross-pollination document is a means to communicate the products, procedures, and tools developed by various sites. Products, tools, and point of contacts are summarized in the cross-pollination document, which is distributed to all EWP sites and will soon be available on the EWP home page. This document is updated and redistributed after each site has noted whether it has a similar tool or information to share or if it is interested in obtaining more information about any particular tool. The document currently contains input from Fernald, Hanford, Idaho, Mound, Oak Ridge, and Savannah River, as well as information on 39 products and tools. Ë

TRAINING

In an effort to address the concerns of the DNFSB and facilitate the uniform introduction and institutionalization of the EWP process, the EWP Steering Committee recommended the design and development of a curriculum that would educate those involved with work planning at DOE sites on EWP elements and implementation. A secondary driver behind the development of a standardized EWP curriculum was the need to share information concerning EWP to develop more coherent and usable performance indicators and universally understood lessons learned.

The initial curriculum design plan was developed by the attendees at the Savannah River core team leaders meeting. Training specialists from the Idaho National Engineering and Environmental Laboratory (INEEL) Institute compiled this input and produced training specifications, which were sent to all participants for review. After the initial input, a group of subject matter experts from the steering committee and training designers from Idaho and Tulane University formed an EWP training design team. The design team met in Park City, Utah, to develop an EWP curriculum that focuses on understanding and implementing key EWP elements. The curriculum also allows each site to tailor it to meet sitespecific needs. The curriculum is designed for

application to both DOE and contractor personnel. The training consists of four courses that can be used separately or in combination for those involved with EWP at DOE sites. The curriculum will be piloted and then made available for distribution at the August EWP core team leaders workshop.

Course One, "Introduction to EWP," discusses what EWP is, why it is being implemented, and how it works. This course targets a broad audience and is designed for anyone—all levels of management and all work disciplines—who needs to be educated on EWP. It will be provided to all DOE and subcontractor management as an overview of EWP. This course could also be provided to those employees who are not directly involved with formal work control but who would benefit from an overview. It is designed to address six key elements: (1) EWP's purpose and its relationship to other DOE initiatives; (2) traditional approaches to DOE work control and the benefits of enhancements; (3) key elements of EWP; (4) worker involvement in the implementation of EWP; (5) successful applications of EWP at various DOE sites; and (6) resources available to implement and institutionalize EWP more effectively.

"Introduction to EWP" is formatted as a 30-minute, stand-alone, video-based presentation. The steering committee recommended that the course be incorporated into orientation for new employees or facility general employee training or both.

Course Two, "EWP Fundamentals," is a hands-on version of "Introduction to EWP." It is intended to train workers on not only the elements of EWP, but also how those elements are applied in real-life work situations. It is designed to train all DOE field office staff and DOE contractor personnel who participate in or are involved with the work planning process

at their facility. Most of the individuals attending the course will have work planning experience and an understanding of the work planning process used at their sites. The course is designed to address the six key elements of "Introduction to EWP" plus roles and responsibilities of the work force; given a work request, the application of EWP elements and steps in the planning and implementation of the work; and performance measures as they apply to EWP.

Most of the video clips used in "Introduction to EWP" will be included in "EWP Fundamentals," which will be structured with "stop-and-discuss" sections so that the instructor can provide additional examples and instruction, integrate site-specific materials, and actively engage the participants in discussion. "EWP Fundamentals" is designed to be taught by the EWP team leader, supervisor, or foreman. Course material will consist of a video tape with programed stops, lesson outline, overheads, and student handouts.

Course Three, "EWP Implementation," provides specific training to individuals assigned to get EWP programs up and running at a site. The audience is primarily EWP core team leaders and members who are in the startup mode and working toward starting an EWP program at a facility or site. In addition, sections of this course can be used to brief senior management, middle management, and DOE field office personnel on ways to support EWP implementation. Key elements of the course include history, purpose, and scope of EWP; methods for overcoming resistance to change and gaining support for EWP; five key elements for successful implementation; sample steps for implementing EWP; work products, processes, and tools available from other facilities and how they can be used; documentation and communication of successes and failures complexwide; resource requirements

and commitments needed for successful EWP implementation; and performance measures and return on investment as applied to EWP.

The training design team recommends that the EWP core team participate in "EWP Implementation" as a unit, and it is assumed that class members have completed "EWP Fundamentals" prior to attending this course. The course is designed as a workshop to maximize retention of course content, facilitate the exchange of ideas, and provide for question and answer sessions. Course materials and discussions will be supported by using cases studies of lessons learned and examples of successful EWP products and tools from demonstration sites, as well as the integration of site-specific examples and materials.

Course Four, "EWP Team Formation and Utilization," provides hand-on skills training in the effective formation and use of teams, a key element of EWP. The course is designed primarily for EWP team leaders; however, sections can be used by team leaders to train team members. Key elements of the course include the use of teams in the EWP process; the criteria for selecting the "right" team and mix of team members; the roles and responsibilities of EWP team members; the design of effective EWP teams given various work management processes; the management of a team to plan work efficiently; the use of team skills to brainstorm, build consensus, and manage conflict; practical communication methods effective for the needs of EWP; and the use of team self-assessment to improve processes and share lessons learned.

The course was developed in a format similar to that of "EWP Implementation," with emphasis on working with individual participants on specific team skills on an as-needed basis, depending on the results of the role playing exercises. E

WEBSITE (HOMEPAGE)

The EWP website is one of many networking tools sponsored by EH and the EWP Steering Committee, making EWP-related information available to countless people across the DOE complex. The EWP Home Page contains links to general information about DOE's Enhanced Work Planning initiative and specific information about various EWP projects. The EWP website will answer the questions, "What is EWP?" and "How can I get more information?"

Eight DOE sites have individual pages with information on whom to contact at that site and links to site-specific success stories, tools, reports, technical assistance plans, and related websites.

The general information page provides links to field and Headquarters contacts (names, phone numbers, and email addresses); announcements of upcoming events and conferences; the EWP Steering Committee charter and a list of its members; and information about EWP efforts still in developmental stages, such as training modules and performance indicators. It also enables a visitor to subscribe to the EWP mailing list.

Both DOE Headquarters and EWP field sites contribute information to the EWP website. It contains reports from individual sites as well as consolidated quarterly reports from DOE Headquarters, press releases, and documents describing EWP from different perspectives (managers vs. workers vs. health and safety professionals). Experienced EWP users as well as novices can benefit from the materials available through the EWP Home Page. Already, specialists in private industry who are intrigued by and enthused about the success stories, products, and tools described on the EWP website have contacted EWP specialists, requesting additional information.

Future expansion plans include pages on frequently asked questions, the "cross-pollination" document used by EWP sites to share products and tools, and a 'drafting board' for EWP documents posted for review and comment.

Ongoing communication and networking are critical to ensuring that sites experience the full benefits of Enhanced Work Planning applied to all work performed within DOE. As new strategies and approaches are proven successful, and in keeping with best management practices of fostering continuous improvement, EWP is ever changing, and those changes are documented on the EWP Home Page and made available to everyone with access to the Internet.

The EWP Home Page can be found on the WorldWide Web at http://tis-nt.eh.doe.gov/wpphm/ewp/ewp2.htm.Ë

PERFORMANCE INDICATOR DEVEL-OPMENT

In an effort to track Departmental performance, a DOE Headquarters working group has been developing a list of corporate environment, safety, and health performance indicators. The group's preliminary list includes four overall categories: indicators related to accidents, indicators related to precursors, indicators related to quality of management, and indicators related to behavior. Within these categories are the specific indicators that reflect the Department's performance in environment, safety, and health. The performance indicators relating to accidents include lostworkday case rate, total recordable case rate, occupational safety and health cost index, worker compensation payments, and red-flag events. Indicators related to precursors are procedure deficiencies and violations, safety actuation/degradation, system near-miss events, skin and clothing contamination, radiation exposure, and plutonium stabilization. Senior management walkthroughs, generating lessons learned, and using lessons learned are included under indicators of behavior. Finally, indicators of quality of management systems comprise advanced safety program implementation status, audit corrective action status, and environment, safety, and health cost efficiency. Enhanced Work Planning implementation status indicators also fall under this category.

Now that the number of projects using EWP elements is growing so rapidly throughout the Department and those EWP projects are at many different stages of development, DOE Headquarters recognizes the need to track the status of EWP implementation complexwide. Performance indicators for EWP have already been defined by DOE field offices and contractors. Some examples of performance indicators developed at DOE sites such as Mound, Hanford, and Idaho are maintenance work request completion time, backlog of maintenance work requests, time required to route maintenance work requests, costs avoided due to using the electronic work package, and lost work day case rate. EH Mentors worked with the 222S Laboratory and the Plutonium Finishing Plant at Hanford in developing "fuzzy" performance indicators to measure subjective attributes such as morale, resistance, and human performance. Rather than reflecting EWP's status, these definitions were developed to measure the degree of success (e.g., dollars saved, reduction in injury/illness rates) of individual EWP projects conducted at different sites.

The "corporate" performance indicator is defined as the number of facilities that have implemented EWP, divided by the total number of facilities in the field. The determination of just what activity is being done by each site

will then be validated by the EWP Steering Committee. Members of the EWP Steering Committee will refer to the list and indicate the facilities with EWP programs and those where implementation of EWP would be appropriate and most beneficial. (For internal use only, they will also determine the status of implementation of EWP at those facilities.) When the performance indicator is calculated for 1996 and 1997, a bar chart will be prepared graphically showing the final performance indicator in the DOE Corporate Environment, Safety, and Health Performance Indicator Quarterly Report. Input data for the corporate performance indicator for EWP must be reported by the end of April 1997 so that it can be published in the Office's next Quarterly Report. DOE senior management can then use the data to gain an understanding of the status and progress of EWP implementation in the DOE complex.

As stated above, the corporate performance indicator for EWP will measure the status of EWP implementation, not its success. The EWP Steering Committee will develop performance indicators to measure the degree to which EWP has been implemented within a site or facility, which may help determine resource allocation. EWP teams are encouraged to continue developing for their own use site-specific or facility-specific indicators related to output or outcome to monitor and measure the success of individual EWP projects. These efforts are not at odds or overlapping; together they will reflect an accurate picture of EWP as a major Department initiative.Ë

WORK PLANNING AND CONTROL

IDAHO

The DOE Idaho Operations Office (ID) and its management and operating contractor have

focused their Enhanced Work Planning (EWP) efforts on expanding the EWP process across the entire Idaho National Engineering and Environmental Laboratory (INEEL) site. The enhanced work control process that focused on one Nuclear Operations facility (the Idaho Chemical Processing Plant) has been completed, providing many tools and lessons learned for revising the work control system at other site locations. The goals of the sitewide work control system are to improve worker productivity; to achieve better quality, environment, safety, and health input; and to improve cost effectiveness.

To expand EWP to all site facilities, the management and operating contractor has established an INEEL Sitewide EWP Directorate Steering Committee. The Directorate Steering Committee is the management team that represents Site Services, Nuclear Operations, Environmental Management, Projects/Construction, and Advanced Engineering Development Laboratories organizations to provide direction and assistance in EWP implementation. In addition, ID is represented with two directors. The Directorate Steering Committee is supported by a sitewide Working Team.

The mission of the Directorate Steering Committee is to provide sitewide coordination and assistance for expansion of the EWP process. The EWP Directorate Steering Committee is guiding the development and execution of the plan for establishing EWP at each facility by providing direction and oversight to the EWP Working Team.

A major milestone was accomplished at Idaho when the Directorate Steering Committee agreed to consolidate efforts of the sitewide EWP Working Team with the Compliance Reengineering Maintenance Team , reducing duplicative efforts and combining resources to address common objectives. The initial Site-

wide EWP Working Team was a multifunctional team chartered to review and recommend actions for improving productivity and safety through improved work planning by application of EWP tools and elements and by successfully integrating them into the site's work management systems.

The Compliance Reengineering Team has the goal to streamline the preventive and corrective maintenance process to eliminate redundant or non-value-added procedures, simplify existing procedures, bring support to worker ratio in line with industry standards, and use matrix and contract support for nonroutine tasks where practical. EWP and Compliance Reengineering complement each other by focusing on different aspects of performing work safely and efficiently. EWP focuses on work control and job planning while Compliance Reengineering activities center on reliability, availability, and efficiency. Both consider the graded approach a key element and both consider the use of performance indicators a key strategy to understanding and improving performance.

The EWP Working Team also recommended expansion of the EWP charter to include both the planning and execution aspects of work, integration of the activities of the two teams under a dedicated EWP leader, and maintenance and implementation of common goals and objectives.

The EWP Working Team proposed that the work control process at all site facilities and organizations be standardized to a common practice using the same work control system and procedure, the same performance indicators, and the same EWP tools and elements. This standardized approach is expected to improve safety and efficiency, provide greater flexibility for resource use across facilities, support matrix management and project-

ization, and simplify training requirements as a first step. The EWP Working Team defined the elements of the standardized work control system as common procedure with identical work control forms; common terminology, roles, and responsibilities for work control participants; identical computerized maintenance management system and scheduling system; one site priority rating system; and common hazard identification tool.

The Directorate Steering Committee approved the Working Team recommendation to combine the EWP and Compliance Reengineering Teams and to proceed with the goal of a standardized approach to work control. The Working Team leaders and Compliance Reengineering leader were requested to develop a detailed plan, schedule, and cost estimate for Directorate Steering Committee review and approval. This plan will define the reconfigured organization for sitewide EWP, including Working Team and subteam membership and required resource commitment. With its integration with the Compliance Reengineering Team, the Working Team is expected to be reconfigured to include increased operations personnel and greater craft and technician worker involvement.

Prior to this change in direction, the EWP Working Team developed a two-phased plan to implement the sitewide EWP process and was working on Phase 1, which applied the EWP process to address issues effectively and recommend actions to resolve work control issues identified in the contractor's Safety Improvement Action Plan. These issues included work order ownership, prework reviews, team reviews, value-added signoffs, making field changes safely, removal of unnecessary boilerplate information, and criteria for final work package approval. These issues have been resolved and are currently being implemented into facility-specific processes.

In Phase 2, which includes Compliance Reengineering Maintenance Team members, the Working Team will develop an understanding of EWP elements, develop performance indicators, complete a baseline review of current work planning and work control practices and procedures at nine different site facilities and organizations, evaluate current practices, and recommend changes to incorporate EWP and standardize practices sitewide.

The Working Team recognized that including team reviews in the sitewide work control process ensures that individuals from all the functions, including craft workers, that have value to add in planning a work package are assembled as a team. The work control procedure establishes a formal process to trigger the need for a team and to specify the makeup of the team based on the complexity and risk of the job. Involving workers on the work planning team is an effective means of using worker experience for identifying work hazards, improving work efficiency, and eliminating unnecessary requirements. Worker involvement during planning activities, including walking down the job at the work location, is effective since these employees are the ones who do the work, know the equipment, and understand job hazards in performing work. In addition, team review and approval on highcomplexity, high-risk jobs is more timely since reviews are completed simultaneously rather than sequentially.

One of the safety improvement action items addressed by the EWP Working Team is prejob briefings. Two site facilities have developed separate procedures for prejob briefings. Representatives from the now-disbanded INEL Conduct of Operations Committee offered assistance to the EWP Working Team in standardizing sitewide practices for determining when informal briefings are acceptable and when formal structured prejob

briefings are required. These representatives agreed that developing sitewide procedures on conduct of prejob briefings (for both maintenance and operations activities) is an appropriate goal. It was determined that there was no current single sitewide driver for prejob briefings but that both informal and formal briefings are held at many of the organizations. The existing facility-specific procedures were reviewed and used to develop the sitewide guidance, now completed and added to the Operations manual.È

OHIO (FERNALD)

A highlight of this quarter's activities was a presentation on the elements of EWP by the Fernald EWP Department at a local college. The audience consisted of students in the business management class and management personnel from private industry responsible for planning and implementing work processes. A great deal of interest in EWP was shown, as demonstrated by the many questions that were asked about worker involvement in the planning process and the overall EWP concept. Fernald's EWP personnel explained that workers are involved in several ways: (1) the preliminary walkdown of task orders, (2) the review of the completed task orders, and (3) the prejob briefing. There is a very strong indication that private industry is also struggling in the work planning area. This presentation to the academic world provided an opportunity to transfer technology to private industry.

EWP at Fernald has fostered improvements in safety and productivity; because of this, EWP is now a 'household' word. More managers now welcome its involvement as a means to improve the project planning process.

During the first quarter of fiscal year 1997 Fernald completed the Sitewide Enhanced Work Planning Implementation Guide and issued it through the site procedure system. The guide provides overall direction on how EWP is managed as a tool to improve work planning and identifies how project managers can use the knowledge and lessons learned from Fernald's EWP Department.

Waste Programs' Enhanced Work Planning Core Team developed a workflow diagram for Waste Programs' task order process. Task orders are used for requesting, planning, approving, and executing waste management activities. From the workflow diagram, roles and responsibilities were defined for work coordination members involved in the task order planning process. A new task order procedure for Waste Programs was developed as a direct result of the completed workflow diagram. Included in the procedure are a task order priority system, a formalized process to involve wage workers in the planning process, and an improved task order request form.

A work coordination group was formed to review and approve these Waste Programs task orders. This group consists of members from Waste Programs, including supervisory and craft personnel, and members from support organizations that impact execution of task orders, including Health and Safety, Material Control and Accountability, Quality Assurance, and other organizations, as required. Development of an automated task order system to request, review, approve, and track execution of Waste Programs task orders was also completed. Testing of the system will begin next quarter. On completion, the new automated task order system will provide faster turnaround for task orders and provide electronically retrievable documentation of all task orders processed through it. Worker involvement will continue to be maintained as part of this new system through worker participation in preliminary job walkdowns, task order approval, and prejob briefings, as well as involvement in lessons learned.

Development and testing were completed on the new automated worker exposure reporting system, which provides an electronic mechanism to retrieve information about employee exposures to workplace hazards in a tabular, graphical, and easy-to-read format to report information to employees. This information is especially useful during annual physicals and doctor-patient interviews. The new system was approved and accepted by Fernald's Medical Department.

Fernald and Mound conducted an information exchange on EWP and waste management. Topics discussed included (1) the history of EWP at Fernald and how its approach enabled team members to participate actively in the EWP process; (2) the workflow diagram and the mechanism used to identify and establish roles and responsibilities in the workflow process; (3) the definition of waste streams (the who, how, and when); and (4) budget accountability for waste management activities.

In mid-February, members of Fernald's EWP Department attended the core team leaders meeting in Augusta. This was an excellent forum for discussing a standardized definition of EWP to be applied complexwide. In addition, training specialists from Idaho were able to gather input from the attending EWP experts and apply it to training materials currently being developed. Department members also attended a followup meeting in Park City, Utah, to finalize portions of those training materials. The courses being developed will be applicable to all sites and various audiences and can be tailored to include site-specific issues. They will be used at Fernald to train the contractor management team as well as personnel in departments unfamiliar with EWP

(which is a requirement of the current award fee agreement).

In the coming months, Fernald's EWP Department will identify new performance objective criteria for the second half of fiscal year 1997. The following two primary areas of performance in EWP will be evaluated: (1) completion of the current EWP initiative in Waste Programs' task order system and turning the system over to them, and (2) development of a sitewide implementation schedule and revision of the sitewide implementation plan to reflect it.

In its effort to continue to export the elements of EWP across the site, the EWP Department will provide implementation information to other activities, such as linking construction contract work activities to the worker exposure program and standardizing activities in waste characterization. **Ë**

OHIO (MOUND)

During the past quarter, progress continued on Mound's sitewide EWP expansion. The effort has been consolidated under the leadership of the Facilities Engineering and Maintenance Group Manager. Using the same successful approach developed to improved work planning and control in fiscal year 1996 at Mound EWP, efforts were expanded horizontally across the site and are now focused on waste planning and control as well as environmental restoration. At the same time, EWP is being vertically integrated within the management structure from the Vice President level to the working level. At this point technical assistance has been provided to ensure that managers develop key performance measures of processes and that roles and responsibilities are clearly defined within the organizations implementing EWP. Concurrently, technical assistance has been provided to the core team that involves identification of improvements to the low-level waste process flowsheet using EWP elements. Senior management in Mound's Waste Management organization is working to (1) identify organizational barriers to EWP implementation of the reengineered waste flowsheet, (2) define associated roles and responsibilities of personnel, and (3) formulate an optimum organizational approach to using multidisciplinary teams for implementing the flowsheet across the site.

The formation of an EWP advisory council is now under consideration. It would provide guidance and oversight to the development of a sitewide strategy, including setting priorities and ensuring EWP elements are applied consistently. The council would consist of management personnel from organizations that have successfully implemented EWP concepts and those currently implementing EWP, as well as a DOE representative. Such membership is intended to provide more consistent and uniform EWP implementation. This approach would be a modified version of the Fernald sitewide implementation model.

In February, delay codes were developed and used by maintenance crews in selected buildings to record interruptions to work. A recent analysis indicates that delays totaled 14.5 percent of available working hours for a 4-week period. The top four delays were caused by (1) work sponsors not being available, (2) the work site not being available to allow work to be performed, (3) workers waiting for radiological surveys, and (4) workers locating materials needed to perform work. This information is now being used to develop corrective actions for those identified delays.

Meetings were held with workers to obtain input on the causes of delays in each category and solicit solutions. The EWP Planning Team is working on refining the delay categories for future use and delay resolutions.

Several action items requested by the workers have been completed to improve communications with radiological control technicians when requiring wipe or radiological information. These improvements include installing additional telephones, increasing phone paging capabilities in the facility, and issuing laminated reference cards for craft personnel to wear with their security badges that list all radiological control technicians and their pager numbers.

The Environmental Restoration Building Disposition Reengineering Team consists of DOE and contractor personnel under the direction of a professional technical facilitator. It is examining safe shutdown and deactivation and decommissioning efforts for opportunities to streamline work planning. The application of EWP elements in this area is contributing to participant buy-in and effective implementation of enhanced environmental restoration processes.

The Waste Management Low-Level Waste Reengineering Project Team, with the assistance of EG&G and EH Technical Assistants, is implementing planning waste characterization and packaging controls before work is initiated and integrating them into planning projects. The objective of this effort is to reduce waste disposal costs by integrating waste preplanning into the generator's (line management) work control and project planning activities. Membership includes representatives from Waste Management and waste coordinators from each of the waste generating organizations. Efforts involve (1) developing a low-level waste reengineering process flow diagram that identifies requirements for potential waste to make it disposal-ready when finally packaged, (2) piloting a proposed waste permit, (3) investigating the integration of the permit with the existing maintenance service request work package process, and (4) identifying performance improvement indicators.

The flow diagram under development emphasizes the necessary interfaces among generators, Waste Management, and other required organizations for completing waste planning prior to its generation and for ensuring delivery of disposal-ready waste. The need for a formal system that assigns responsibility, monitors progress, and provides feedback to management has been identified by the multi-disciplinary team. Currently, there is no formal system to track, trend, prioritize, or monitor the performance of waste management activities on a daily basis.

A pilot of the proposed waste permit, completed for ongoing T-Building laboratory waste streams, was submitted to Waste Management for comment and refinement. In addition, Maintenance is investigating the use of maintenance service request packages to determine the feasibility of integrating the waste permit with package development. The waste permit has been developed as a proposed method for generators to work with the Waste Management Department to preapprove waste streams through joint multidisciplinary preplanning efforts. The final decision for institutionalization of the permit requires additional work between generators and waste management.

The change in mission of the Mound facility from weapons production to environmental restoration has resulted in a redirection of resources; disposal of waste now becomes the primary issue. With this new direction comes the waste management issues that are prevalent across the DOE complex.

Waste storage, lack of disposal options, waste characterization, waste volume projections, and assessment of progress are issues being addressed by Waste Management where EWP concepts are being applied. In addressing these issues, the EH Technical Assistant worked with Waste Management to form multidisciplined teams chartered to define disposal options, select characterization technologies, and select a path forward for existing and newly generated waste streams. As a result of these efforts, specific accomplishments were achieved that included a cost savings for disposal of Aqueous Scintillation Cocktail vials and the development of a conceptual design for the wastewater treatment facility reengineering project.

A process was established for the disposal of Aqueous (nonmixed) Scintillation Cocktail vials. This action would eliminate the use of an offsite incinerator for the disposal of 180 drums of waste, thereby saving \$319,000 in treatment costs. The conceptual design for the wastewater treatment facility, if implemented, would reduce cost of wastewater treatment operations by approximately \$5 million during the lifetime of the operation, estimated to be 8 years. Ë

OAK RIDGE

Activities at Oak Ridge during 1997's first quarter have solidly established the EWP program at both the Y–12 Plant and the East Tennessee Technology Park (formerly the K–25 Site). Overall, Oak Ridge EWP is working to enhance work control processes within Enriched Uranium Operations and Environmental Management Enrichment Facilities at the Oak Ridge Reservation as well as at Portsmouth and Paducah. Oak Ridge's EWP program is also becoming an integral part of the way the sites will develop and implement Integrated Safety Management strategies per

Defense Nuclear Facilities Safety Board (DNFSB) recommendations. Oak Ridge EWP teams now meet regularly and EWP leaders consistently participate in national EWP forums, including February's EWP Conference in Augusta and the March EWP training meeting in Park City, Utah. EH support during the first quarter has focused on helping the sites set up EWP programs and establish EWP core teams to baseline work control processes and work issues. Support has also focused on helping disseminate proven EWP strategies, tools, and work products from elsewhere in the DOE complex to Oak Ridge leaders for their consideration, tailoring, and use.

Building on a successful EWP demonstration that occurred within K–25's Waste Programs Division during the first half of 1996, an expanded EWP program was initiated in the fourth quarter of 1996 with participants from Y-12, K-25, and Oak Ridge National Laboratories. The primary objective of the initiative was the "integration and refinement of the best elements of the sites' work control processes such that a consistent, enhanced work control system can be piloted during critical upcoming activities dealing with restart of processes, waste management, and maintenance." Another key objective established was to use EWP "as a means of implementing Integrated Safety Management strategies into the work control processes" per DNFSB recommendations.

Four EWP subcore teams have been established with objectives as follows:

< Work control teams will integrate the best work control processes of both Y-12 and East Tennessee Technology Park and enhance them such that a consistent, streamlined, defensible, graded planning approach is developed with special focus on the "less rigorous" maintenance jobs (which constitute the vast majority of work packages).

- The Automated Planning and Permitting Team will work with the work control teams to develop an automated, streamlined system that provides an effective way to identify which permits and controls apply to work being planned. It will incorporate permits and forms dealing with safety, industrial hygiene, radiation control, environmental protection, and engineering as well as Work Smart Standards checklists used by project managers to help determine the regulations, DOE Orders, and special facility requirements considered "necessary and sufficient" for the work at hand.
- < A team has been designated to integrate EWP with complementary initiatives currently being undertaken at the site, including Integrated Safety Management (per DNFSB 95–2 recommendations), Lockheed Martin Energy Systems Safe Work Control Program, Voluntary Protection Program, Work Smart Standards initiative (Environmental Management Enrichment Facilities), and Oak Ridge's application for the Energy Quality Award (Malcolm Baldridge).
- The Performance Measures Team will enhance the benefit and use of work control performance measures (such as work delay codes, electronic manager alerts) by managers and supervisors through refining and supplementing existing metrics systems, training, automated systems, and the like. Also, this team will assist the other EWP subteams in setting up and using fair and meaningful systems to help measure their success at accomplishing the objectives they have established.

First quarter activities have centered on establishing the scope and objectives of the EWP effort through participation and buy-in from the Oak Ridge sites and multidisciplinary groups involved. The work control, automation, and complementary initiatives teams have

been meeting regularly to baseline work control processes and identify where and how fundamental elements of EWP can best be incorporated. While separate work control team meetings are held for Y–12 and the Technology Park, work control problems appear to be similar, as are the enhancements being developed. As enhancements are developed and applied consistently at the sites, better integration of the work control processes will result.

Enhancing the automation of work control systems is a strong theme of the Oak Ridge EWP program. Oak Ridge is actively building on Hanford's job hazard analysis software and the Idaho automated job requirements checklist by programming in additional features and tailoring the checklist to meet site-specific Initial programming efforts applications. should be completed in April for testing and refinement of a system that improves the consistency, defensibility, and technical quality of the hazard identification and permitting aspects of work control. In addition, plans have been made for EWP participants to visit Fernald in April to learn more about its automated work package and the enhanced work control procedures developed at that site.

Oak Ridge is also contributing to the increasing number of EWP-related tools and work products through the development of its Work Planning and Permitting Information System, an automated and defensible way to determine which permits and controls apply to the work at hand. Although system development began during the original EWP pilot at K–25, current efforts are dramatically increasing its capability and usefulness. Thus far, the system contains over 40 permits and forms currently in use at K–25 and Y–12, including those dealing with safety, industrial hygiene, radiation control, environmental protection, and engineering. Being added to the system are project manage-

ment checklists, including automated Work Smart Standards checklists, which are used by project managers to help determine the extent of standards, and DOE Orders that are considered necessary and sufficient for the work at hand.

The Work Planning and Permitting Information System is unique in that it is a web-based system allowing remote access through the Internet. Through hyperlinks, it automatically attaches to other established intranet sites and databases at Oak Ridge that are currently being used to compile building hazard information and process forms and permits. The planning and permitting information system will soon be used by planners and facility owners to identify and electronically attach applicable permits to a work package for computerized routing and approval, thereby improving efficiencies and reducing the potential for errors or omissions. By helping work requesters, planners, and facility owners identify hazards and requirements for permits well up-front in the work control process, the system enhances integration of hazard controls into job activities and pinpoints where the expertise of environmental, safety, and health professionals can be brought to bear in a more timely fashion.

Associated with EWP efforts at Oak Ridge, EH Mentors and members of the EWP teams have also—

< supported the development of a draft document establishing that the overall process for ensuring safety and health is planned and implemented into work activities, consistent with EWP and Integrated Safety Management tenets. The document (titled Lockheed Martin Energy Systems Safe Work Controls Program, February 11, 1997) sets expectations and methods for a systematic approach to the identification and control of hazards. It will</p>

cover Lockheed Martin Energy Systems activities throughout the Oak Ridge Reservation;

- < assisted in conceptualizing how Oak Ridge's EWP program can be used as an integral part of the path forward in response to a recent fatality at the K–25 Site; and
- < helped the site recognize through the writeup of a dramatic success in the cleanup of a large fallen tent covering ½ acre of hazardous and mixed waste containers at Y-12, how it is already using EWP elements in some cases. The writeup illustrated how EWP concepts played an important role in the project's success and why institutionalization of EWP processes is important. Ë</p>

ROCKY FLATS

Rocky Flats has embraced the elements of EWP. During this quarter, Rocky Flats initiated an effort to identify enhancements to its maintenance work control system. A team of key personnel from the integrating contractor, each of the three second-tier subcontractors, and the Rocky Flats Field Office is reviewing the system. Their revisions will be targeted at simplifying the work process by applying a graded approach to work management based on risk and complexity. The work control system, called the Integrated Work Control Program, provides the safety controls for performing maintenance, construction work, and environmental work. This team of key personnel is similar to an EWP core team. Like an EWP core team, this team is evaluating, improving, and enhancing the Integrated Work Control Program by which work is identified, planned, approved, controlled, and executed. Rocky Flats is continuing to increase its association and integration with other EWP sites.

The team's specific changes recommended to the Integrated Work Control Program sitewide procedure will include improvements to the job hazard analysis process, the most recent version of which is being sent by Hanford to Rocky Flats. Other planned improvements include a simple way of planning and writing a work package for maintenance and other types of work, increased use of electronic technology, and more emphasis on the graded approach. The Integrated Work Control Program will also become an integral component of the Integrated Safety Management program.

During this quarter, in addition to the above work control process enhancement effort, the Rocky Flats Field Office and the site integrating contractor and subcontractors identified three EWP pilot projects at the Rocky Flats Environmental Technology Site, including (1) cleanup and removal of chemically contaminated soil at the Mound Project and (2) decontamination and decommissioning (D&D) of Building 444, which was a uranium and beryllium fabrication building. The third EWP pilot project involves increasing the efficiency and productivity of electrical maintenance in Building 559.

A draft Implementation Plan for the EWP pilot projects at Rocky Flats Environmental Technology Site has been developed. This plan, a cooperative effort to improve worker safety and productivity in all phases of work planning and execution, includes personnel involvement, ownership, efficiency, and productivity. It is currently being reviewed. To date, no major problems with the plan have been identified. The implementation plan will be initiated in the March-April timeframe.

In concert with the draft Implementation Plan, three EWP pilot project working teams have been established to improve the manner by which work is planned and executed and to

ensure the correct mix of personnel (e.g., team leader, crafts, electricians, planner, engineer, radiological technicians, and representatives from safety and health, medicine, and procurements) needed to achieve the scope of work The working teams for the successfully. Mound Project, the Building 559 electrical maintenance project, and the Building 444 D&D pilot projects have been formed and are meeting weekly. To avoid past problems, the Mound Project has included craft input in the work planning and execution processes. The other two working teams are just initiating the planning process for their projects. Mound EWP pilot project progressed rapidly this quarter. The pre-evolution meeting for the contaminated soil feed stockpile site preparation and excavation activities was conducted on March 18, 1997. More than 50 people involved attended, including workers, heavyequipment operators, radiological control technicians, and personnel from Safety and Health, Engineering, Quality Assurance/ Quality Control, Environmental Management, and Radiological Engineering. Excavation of the chemically contaminated soil at the Mound site began March 21, 1997. As a result of this pre-evolution meeting and the thorough upfront planning, which included worker input, the excavation of the contaminated soil was completed without incident.

Rocky Flats is currently evaluating the skill-of-the-craft criteria and procedure developed at Hanford for use in its maintenance work process. These criteria are being incorporated by the Building 559 EWP working team into its electrical work package planning process and will be used to perform less complicated electrical tasks called "minor" work packages. These are work activities that have pre-approved job hazard analysis, which require no approval authority prior to proceeding with work. This is a work process streamlining effort that Rocky Flats is trying to implement.

The product of this combined effort, (1) improving the Integrated Work Control Program and (2) conducting three EWP pilot projects to demonstrate improvements to the work process, is that EWP is being incorporated as a major component of the site's Integrated Safety Management process. A copy of the Integrated Safety Management document has been sent to the Rocky Flats Field Office for review and approval. The document will be incorporated into the site's response to DNFSB Recommendation 95–2. Once this Integrated Safety Management process is approved by the appropriate parties, it will be implemented sitewide. Ë

PANTEX

During 1997's first quarter, the Pantex Plant expanded its use of EWP elements as a tool to increase productivity and to help compensate for the effects of downsizing. In determining whether to participate in the EWP program, Pantex recognized that it already used much of what EWP represented; for example, a new state-of-the-art integrated work package management system and various team functions involving employee participation. None-theless, EWP participation at Pantex began in 1996 after the baselining team indicated that there could be additional benefits from applying certain techniques that had been proven successful at other DOE sites.

A specific project was identified in mid-1996 that served as a pilot for use in exploring the application of EWP elements within the plant maintenance organization. The Railcar Reconfiguration Project was chosen because of its fortuitous timing and the fact that a similar project had been conducted approximately 2 years earlier that could be used as a baseline for comparison of EWP techniques to the more traditional project management system.

Using EWP techniques, the Railcar Reconfiguration Project has achieved operational efficiencies, cost savings, and exemplary safety performance in the conduct of required work. This project is currently 67 percent complete; it has consistently run ahead of schedule and under budget, and there have been no lost-time injuries or first-aid cases. Pantex is especially proud of this performance in that thus far over 4,000 sandbags have been removed from tight spaces in the railcars with no back injuries to workers.

In the 9 months since the beginning of the first EWP project, the concept of using EWP techniques for the planning and management of work has been steadily growing. A central EWP core team has been established that coordinates EWP efforts and teams and serves as an interface between the EWP effort and senior plant management, DOE, and the employee unions. The core team presents the benefits and successes of the EWP effort to different plant organizations and assists interested organizations in their implementation of EWP techniques.

EWP concepts have become firmly entrenched in the plant maintenance organization. A formal policy was announced in the fall of 1996 by the plant maintenance organization that all new maintenance initiatives and projects would be managed using EWP elements and techniques. To date several EWP efforts are underway at Pantex, including—

< In January 1997, Pantex implemented a system for handling minor maintenance work orders using skill-of-the-craft criteria pioneered at Hanford. The goal was to reduce the paperwork associated with small, noncritical jobs that could be handled based on utilization of the capabilities of journeyman crafts personnel. Since this effort began, there have been 690 minor maintenance jobs (300 of which are already complete) entered into the job control system, which represents about 18 percent of the total number of jobs. Use of this system eliminates the formal planning process time previously associated with these jobs and allows the plant to complete more jobs with the available craft resources. Minor jobs are sometimes grouped by area to be worked by a small team of crafts personnel all at the same time. This approach minimizes the overhead associated with deployment and gaining access to do the work and further improves efficiency. Use of this technique has led to completion of jobs that previously would have remained unfinished because of their low priority.

- < Stock materials are being moved from a remote location into an area within the 12-68 Machine Shop. This special tooling job planning and process improvement effort will eliminate much of the delay and lead time in getting stock materials to the work area where the fabrication is performed. The tooling planner has been located in the tooling shop office to assist the first-line foremen in processing work packages more quickly. These changes will facilitate more employee involvement, faster change implementation, and overall improved communications. The goal of this effort is to improve the throughput of the machine shop and reduce the backlog while maintaining a safe working environment.
- < A new EWP project has been identified to decontaminate FS-23 to allow reuse as a different function. The team for this project is being led by the plant design organization and includes all the various disciplines necessary to address the hazards involved. The project is currently awaiting availability of funding to proceed with the actual cleanup phase. Ë

LOS ALAMOS

During this report period, accelerated efforts were expended to maintain the Los Alamos National Laboratory schedule for implementation of a sitewide work control system by March 31, 1997.

The work control requirements document issued for comment in December 1996 was finalized and issued as a Laboratory Implementing Requirement in February 1997. All comments were evaluated, resolved, and discussed with Facility Management Unit personnel before issuance of the document. In addition, the work control process logic flow charts that support the requirement document were finalized and included the addition of the methodology to be used for bringing large projects within the scope of the work control system. Finally, a maintenance zone work control procedure that describes the process for uniformly processing approved work requests during planning, execution, and acceptance was revised to reflect changes in the requirement document. This document was issued as an institutional procedure on March 31, 1997.

Development of the electronic work request system based on "Power Builder" continued. This system incorporates electronic site hazard analysis screening, detailed site hazard identification and resultant mitigating actions to quickly process work requests. It permits automatic forwarding to the proper review/approval authority, uses electronic signature, and will forward the work description to the DOE Los Alamos Area Office Chairman of the Davis-Bacon Committee to receive determinations of coverage in an expeditious manner. The program was available for downloading and user testing on March 10, 1997, and Los Alamos National Laboratory

computer personnel have offered to share the program with any interested party in the DOE Complex.

Work control training began initial development in January 1997. The lesson modules were revised and finalized in February when the work control Laboratory Implementing Requirement was approved. Formal classroom training began in mid-March, with 11 sessions scheduled to complete Facility Management Unit personnel training by March 31. The training programs consisted of classroom sessions to discuss the work control process in detail. Twelve computer workstations were set up in the classroom to support hands-on training for the electronic work request and hazards screening/identification. Early training sessions experienced some minor difficulties that were promptly corrected and the remaining sessions went smoothly. Makeup sessions for those individuals involved with the "difficult" sessions were scheduled and conducted. To date, 128 Facility Management Unit personnel have been trained, and three additional sessions have been scheduled for April 1997.

In January 1997 the Los Alamos audit and assessments group began development of the methodology to implement a self-assessment of the work control process. Current plans are to be prepared to begin the self-assessment when there is some experience and data from the newly implemented work control system in order to support development of a report of findings by April 30, 1997. DOE plans to formally audit the work control process during the next quarter with a report to be issued by June 30, 1997. Ë

RICHLAND (SITEWIDE)

The DOE Richland Operations Office (RL) and the Hanford integrating contractor are implementing Enhanced Work Planning

(EWP) sitewide by fully integrating EWP into the Integrated Safety Management System for contractor operations at the Hanford Site. EH Technical Assistance is supporting this effort by helping to develop and implement the EWP elements of the system.

Among other objectives, the Integrated Safety Management System is intended to establish a comprehensive approach to safety management that fully incorporates EWP and that is fully integrated with work management at all levels of the contractor organization. The system will replace the contractor requirement for an environment, safety, and health management plan, which, as a separate document, may not have been fully integrated with workflow and EWP initiatives. By unifying and integrating safety management, EWP, and work management, the Integrated Safety Management System will meet requirements of DNFSB Recommendation 95-2 regarding safety management, incorporate EWP elements, and establish the requirements and approaches that achieve safe, effective, and efficient operations and activities.

Development and implementation of the Integrated Safety Management System, with full EWP incorporation, is a top priority of RL and the site integrating contractor. Recognizing that the environment, safety, and health management plan provided the means to establish a safety management system and institutionalize EWP, RL directed the transformation of this plan into an Integrating Safety Management System plan. Demonstrating management commitment to this effort, RL is providing leadership at its top ranks by establishing executive sponsors, including the Director of the Office of Environment, Safety and Health and the Assistant Manager for Waste Management, both of whom report directly to the RL Manager. Likewise, the site integrating contractor has established cosponsorship at its senior ranks.

The overall sequence of events for EWP implementation is to develop the Integrated Safety Management System plan, including EWP elements and the EWP implementation and improvement process; prepare an implementation strategy and plan; and then implement the plan at all facilities and projects accordingly. The EWP improvement process is being proposed as key to the implementation strategy for the Integrated Safety Management System.

Concurrently, preparation is underway for seven facilities and projects to implement EWP elements along with implementation of the automated job hazard analysis system. This should be consistent with the intended Integrated Safety Management System approach to establish EWP across the site and will provide a testing ground to optimize EWP approaches for sitewide implementation under the Integrated Safety Management System.

Consistent with EWP elements, a team approach is being taken to the safety management system developmental effort, with team leaders from both RL and the integrating Three levels of developmental contractor. the overall teams have been established: contractor level team, the facility/project-level team, and the activity-level team. Membership on these teams reflects a broad cross section of disciplines and working levels. Management and workers from RL, the contractor, and the major subcontractors are represented. Line organizations, safety organizations, engineering organizations, and technical support organizations are also well represented.

The activity-level team, in particular, is working to establish EWP elements as fundamental to the work management process with full integration of safety. Also, the EWP improvement process is being incorporated to baseline

current practices, identify enhancements, demonstrate enhancements, measure success, refine, and then fully implement. When the enhanced approach is institutionalized at a facility or project, the EWP improvement process will disband and transition to a normal function of improvement through self-assessment and other feedback mechanisms.

Beginning in February, regular team meetings have been held to establish the framework and overall approaches to the Integrated Safety Management System development process and its content. Initial working drafts have been prepared and continue to be discussed, reviewed, refined, and further developed. The approach taken thus far is to meld the safety management approach with the work management process, creating one unified process where safety management and work management are one and the same. EWP elements and processes designed to optimize work control processes and achieve integration of environment, safety, and health with work control are key factors in the Integrated Safety Management System. A milestone has been established to complete the system by June 1997.

While the Integrated Safety Management System is in development, EWP field activities have continued. With nearly 15 months of operations conducted under EWP, PUREX has nearly completed its deactivation well ahead of schedule, under budget, and maintaining an impressive safety performance. The Plutonium Finishing Plant continues to make steady progress toward work management improvements, has conducted automated job hazard analysis demonstrations, and will soon be implementing job hazard analysis for all its work activities. The Evaporator/Liquid Effluent Facility has reengineered its work management process incorporating EWP elements and

implementing the automated job hazard analysis. K Basins is continuing work management improvements addressing schedule improvements and worker involvement (the self-assessment "Champions" program). Hanford is completing an update of the automated job hazard analysis in preparation for implementing EWP at seven facilities.

The challenge at Hanford over the past two quarters has been to maintain the momentum previously established for EWP while the site has been in contract transition. In October 1996, the new managing and integrating contract was initiated, which included the Hanford integrating contractor, six major subcontractors, six enterprise subcontractors, and lower tiered subcontractors. Although EWP was endorsed by both RL and the new site integrating contractor contract team, maintaining the EWP initiative without any disruption was difficult. Many key site personnel leading the EWP efforts were either lost to the site or distributed at various positions among the contractors and subcontractors. The EWP Advisory, Core, and Facility Teams lost their membership and charter and were not immediately reformulated. Finally, RL, the site integrating contractor, and each major subcontractor were addressing numerous issues involved with the transition. Although most of the individual facility and project initiatives continued, a temporary hiatus occurred in exporting EWP to other facilities and in maintaining teamwork and interactions between participating facilities and projects.

During the same time, however, RL and the site integrating contractor seized on the contract transition as an opportunity to implement EWP sitewide as part of the environment, safety, and health management plan, which has since evolved into the Integrated Safety Management System plan. Therefore, instead of hopscotching from facility to facility, the

Integrated Safety Management System, along with its implementation plan and EWP improvement process, will address sitewide implementation of EWP and other system requirements.

While the Integrated Safety Management System plan is in development, EWP leaders have been assigned by the Hazard integrating contractor. With support from EH, they are undertaking a sitewide communication initiative regarding EWP and its implementation as part of Integrated Safety Management System. In addition, they are working to reestablish the networking, coordination, communication, and teamwork among facility and project initiatives and are supporting the seven facilities preparing for EWP implementation.

Overall, the Hanford approach is addressing the sitewide implementation of EWP elements through development and implementation of the Integrated Safety Management System. At the same time, facility EWP activities are being conducted (and others are in preparation) that will provide for optimized processes, tools, and approaches once systems implementation begins. Hanford has largely recovered from the interruption of EWP at contract transition and is moving forward with the initiative. The anticipated path forward for EWP is as follows:

- < Develop the Integrated Safety Management System by June 1, 1997, fully incorporating EWP;
- < Conduct ongoing communication with all parties regarding EWP and its implementation as part of the system;
- < Concurrently implement EWP at seven facilities to test and refine the processes;

- < Develop an Integrated Safety Management System implementation plan using the EWP improvement process to baseline, develop enhancements, and implement improvements; and
- < Implement EWP with Integrated Safety Management System implementation. Ë

RICHLAND (PLUTONIUM FINISHING PLANT)

Enhanced Work Planning (EWP) support at the Plutonium Finishing Plant continued to concentrate on improving maintenance work management and control during this reporting period. The objective of EWP technical assistance is to assist management in strengthening and reinforcing the maintenance work planning, scheduling, and implementation process sufficiently to realize a step-change in plant productivity and performance while optimizing environment, safety, and health integration. To achieve that objective, the following EWP-supported improvement initiatives have been implemented:

Autonomous maintenance teams consisting of team planners, schedulers, persons-in-charge, crafts, radiological control technicians, and others, under the direction of individual team leaders, have been successfully deployed in the field. Team training requirements commensurate with the expanded role of self-directed maintenance teams are currently being developed. Team training focuses on a teamwork approach to work planning, scheduling, and implementation, with emphasis on craft involvement throughout the process to ensure that the work will be performed safely and efficiently.

Corrective maintenance schedules have been implemented that reflect prioritized, ready-towork activities, including support organization requirements, keyed to plant safety and performance. Corresponding plan-of-the-week and plan-of-the-day schedules have also been developed to support the master schedule. Based on the success in using the schedule to date, management is currently negotiating a performance-based fee agreement as an incentive to promote continuing schedule performance improvement.

Maintenance performance indicators have been implemented to track and ascertain the status of key indicators of performance (e.g., corrective maintenance backlog reduction rate, open work package reduction rate, monthly work package completion rate, work process effectiveness, performance-to-schedule). In addition, daily schedule performance measures have been implemented that identify delay causal factors as well as the organizations responsible for the delays. The daily schedule performance measures will assist management in taking appropriate remedial action. addition, a maintenance performance indicator has been developed to support the performance-based-fee-agreement discussed above. The maintenance performance data described is currently being accumulated to facilitate trending and cost performance analyses. Work management process improvement cost savings should be available during the next quarter. Improved teamwork, a risk/complexitybased approach to planning work, improved resource coordination, and schedule discipline are expected to improve the work package completion rate, reduce the number of open work packages, and bring about other measurable improvements.

Maintenance work backlog initiatives have been implemented on a team basis, which consists of purging the backlog of non-essential work, consolidating duplicate work requests, and optimizing the use of routine- use work packages. Currently, there are 37 routine-use classifications in place, which has alleviated the need for 200 planned work packages during this reporting period, resulting in an estimated cost savings of one-half million dollars.

Job hazards analysis interest on the part of Plutonium Finishing Plant management has resulted in the initiation of an internal pilot program designed to introduce plant maintenance teams to a stand-alone version of the program prior to the implementation of a sitewide server-based program. Team planners and schedulers have been trained in the use of the stand-alone version. Implementation of the pilot program is scheduled for completion during the next quarter. Once the sitewide server-based program is available, crafts will work side-by-side with team planners in performing work package job hazard analyses.

The implementation of self-directed maintenance teams, the introduction of a formal maintenance schedule, the use of maintenance performance indicators, and a concerted effort on the part of management to reduce the work backlog have significantly improved the management and control of maintenance work.

EH Mentors will continue to concentrate on developing and implementing EWP tools at the working level necessary to accomplish the goals of the Plutonium Finishing Plant Maintenance Management Improvement Program. Progress to date has been encouraging; however, the real challenge is in driving the awareness of performance improvement down to the working level. Management concentration on team training and performance will go a long way toward creating the setting for success. E

RICHLAND (K BASINS)

From January through March 1997, K Basins contractor management and personnel continued making progress toward improving conduct of operations and work control processes.

Last quarter, October through December 1996, the K Basins contractor established new standards for conduct of operations and work control. Operationally focused work schedules were developed and continually improved. Weekly work schedules were committed in advance. Work packages were developed, reviewed, and walked down by all affected groups, when appropriate, prior to the scheduled execution day. Emergent work tasks were controlled to minimize impact to committed schedules. Finally, work tasks that were not completed as scheduled were individually evaluated for identification of barriers, lessons learned, and improvement areas. As a result of the various efforts initiated last quarter to work safely and productively, K Basins is successfully completing nearly 90 percent of all scheduled work, a dramatic increase from 68 percent just last quarter.

Another important factor contributing to improved work performance is the effective implementation of the Champions program that encompasses conduct of operations and maintenance. Key elements in this program include worker involvement in self-assessing operations, maintenance, and health physics; required time in the field each week; real-time coaching and feedback to improve performance; issue tracking and followup; and periodic reporting of results. This program, a powerful self-assessment tool, is becoming more effective with time and is greatly enhancing K Basins' ability to reach the higher standards needed to meet Spent Nuclear Fuel commitments.

To support further productivity increases, the position of Operations Representative (more commonly known as an outage manager) is also improving in effectiveness. The purpose of this position is to have a single individual responsible for prioritizing work, setting scheduled dates, reviewing work packages for total facility integration, emergent work coordination, and overall job coordination. This position is staffed by a shift manager or assistant shift manager who rotates into the position for a 4-week assignment. The creation of this position has proven valuable, especially in keeping a production schedule focus and quickly removing barriers to emergent tasks.

During this period, site contractor management has initiated another key element needed to attain higher standards in productivity and safety—real-time skills training for managers and lead exempt positions. This training was developed under the guidance of K Basins managers to ensure that the program will properly focus on the skills needed to lead K Basins successfully through the committed path-forward activities. The training will be provided over an extended time to ensure a lasting change.

With regard to sharing work improvement experiences, K Basins personnel are providing input to the Hanford Integrated Safety Management System document. K Basins' primary contribution to this document will be in detailing the graded approach categorization of work using routine, skill-of-craft, and nonroutine work. In the early days of EWP at Hanford, K Basins provided the leadership in developing and implementing this graded approach process. Since then, sharing of information among facilities and across sites has led to refining the improvement process for working safely. Ë

RICHLAND (PUREX)

After implementing EWP in January 1996, PUREX now has 15 months of operations being conducted using an EWP approach. PUREX's deactivation is nearly complete. The project is well ahead of schedule, under budget, and maintains an impressive safety performance. PUREX has established its work management process around the key elements of EWP, including team approaches, worker involvement, risk- and complexity-based approaches, and line management commitment.

During this quarter, trailer removals, deactivation of sanitary and raw water systems, deactivation of the sanitary sewer, walking-down surveillance lighting, and establishing required air monitoring for future surveillance have all been a part of the PUREX stabilization work. This varied and demanding work was planned and conducted by work teams that fully involve workers from initial planning through execution and closeout. These teams plan and conduct work using all EWP elements.

PUREX is driving toward completion of its deactivation project ahead of schedule. This success is best illustrated by reviewing some of the "Critical Few" performance measures established at PUREX. For instance, based on milestone completions, PUREX has remained 138 days (on average) ahead of schedule, as well as remaining ahead of the critical-path schedule. Safety statistics indicate PUREX to be well under the DOE average (only one incident to date for the first quarter). PUREX has not experienced a lost-time accident for about a year. Radiological Control incidents remain low as well. During the first quarter, PUREX experienced only four radiological problem reports, which (when compared to 11 experienced during the same timeframe last year) is indicative of the PUREX drive to finish work ahead of schedule and under budget while maintaining a safe working environment.

Given the current pace, PUREX will finish deactivation in May (their project completion goal after implementing EWP), with the final transition to the surveillance contractor occurring on October 1, 1997. Ë

SAVANNAH RIVER

During January, February, and March, the Savannah River Site implemented an organization and process for sitewide implementation of EWP elements. A site EWP coordinator and an assistant were appointed to coordinate site EWP activities. (A Savannah River Operations Office EWP representative had been designated previously.) The next quarter's activities will focus on linking EWP processes with the sitewide maintenance reengineering activities and integrating DOE complexwide successes into the reengineering activities.

During the past quarter, the Nuclear Materials Stabilization and Storage Facility EWP Core Team effectively completed its pilot projects using EWP elements to enhance waste minimization planning. The core team completed distribution of the Rollback Handbook throughout the DOE complex. The rollback (planned and completed using EWP elements) resulted in a process to institutionalize radiological hazards reduction and is now a permanent part of the work planning process at Savannah River within the Nuclear Materials Stabilization and Storage Facility. The benefits of implementing and maintaining contaminatedarea rollbacks were communicated throughout the site and have resulted in a sitewide implementation plan, facilitated by the Solid Waste Group and supported by the Nuclear Materials Stabilization and Storage Facility EWP core team. The sitewide implementation is being

planned using a computerized rollback selection model, an economic model developed to optimize rollback project selection. It is being used to calculate which combination of rollbacks will provide the greatest return for a specified funding level. Data input consists of cubic feet of low-level waste generated per year, pounds of laundry generated per year, estimated cost to recover, and funding level. The model will provide recommended budget level, recommended annual savings, calculated annual savings, recommended projects, and return on investment. Target facilities for sitewide EWP rollback implementation are F-B line, high-level waste, the Savannah River Technology Center, and excess facilities and reactors.

The Nuclear Materials Stabilization and Storage Facility EWP core team has now successfully performed a rollback pilot, implemented a handbook to share lessons learned from the EWP process, developed a planning methodology to perform cost/benefit analyses and prioritize or optimize rollback initiatives, and facilitated sitewide implementation. This rollback process has resulted in a permanent improvement in the work planning processes and management culture within the Nuclear Materials Stabilization and Storage Facility at Savannah River. It permanently removes radiological hazards from the workplace and results in cost savings through equipment reuse, waste avoidance, and improvements in worker productivity.

Other EWP activities completed during the first quarter include the following accomplishments:

The tool control team completed a benchmark of contaminated-tool inventory and control practices at the River Bend Nuclear Power Plant. River Bend has a "best in class" program as evaluated by the Institute for

Nuclear Power Operations. Team members are currently developing facility-specific plans for tool control.

- < The EWP core team completed a 5-minute videotape, "H-Canyon Rollback—An EWP Success Story." This video presents the benefits, management culture, and work planning changes effected by the rollback team within the Nuclear Materials Stabilization and Storage Facility. The tape will be used as a training overview and as a primer to introduce the benefits of rollback planning and implementation to the DOE complex.</p>
- < The Nuclear Materials Stabilization and Storage Facility EWP core team is currently evaluating a pilot project to implement a graded approach to job hazard analysis within the Nuclear Materials Stabilization and Storage Facility. E

BROOKHAVEN

In the previous quarter, the Brookhaven National Laboratory EWP pilot program was successfully completed. The pilot demonstration focused on the most visible element of EWP, the multidisciplinary team. A significant benefit has been the improved communication among involved parties. Another tangible benefit has been a reduction in time to get the appropriate permits filled out and approved.

An interim evaluation of the Brookhaven EWP pilot demonstration was conducted and documented. Based on this evaluation, the Brookhaven EWP core team has briefed management on the pilot program and its achievements. The general reaction to the pilot EWP demonstration was positive. Various meetings have been held, including with DOE Brookhaven representatives, addressing expansion of the EWP pilot demonstration.

During the first quarter of 1997, building on the success of the pilot program, an implementation plan was developed at Brookhaven to expand EWP. The purpose of this expanded EWP Demonstration Project is to continue identifying and testing concepts to improve work planning efficiency and effectiveness, from operations, productivity, cost-effectiveness, and safety standpoints. Activities will center on the types of enhancements identified in the pilot project that have not yet been fully addressed.

It is proposed that, in addition to the existing EWP core team, an EWP Steering Committee be established to provide guidance in EWP implementation and assistance in scope expansion. The EWP Steering Committee will comprise management from participating departments, as well as the Brookhaven DOE group office.

During this quarter, a comprehensive set of performance indicators have been identified for the expanded EWP demonstration to track and measure the EWP process. The five proposed indicators are safety, cost, quality, planning, and backlog. Each has a subset of simple indicators which are, in general, directly measurable. Positive comments have been received from participating organizations.

The major roadblock to expanding the pilot EWP demonstration is the resources available. Though Brookhaven management generally supports the EWP process and expansion, resources have not been allocated during the quarter. The Plant Engineering Division supports EWP in general, but has difficulty assigning a full-time coordinator for the expanded EWP demonstration. Ë

RADIOLOGICAL CONTROLS

OHIO (FERNALD)

EH Mentors and the Director, Radiological Protection (EH-3), completed their assistance to the Fernald Environmental Management Project in producing a landmark report on Radiological Control Optimization. Starting in August 1996, this study entailed a critical evaluation of radiological control practices; personal protective equipment (anti-contamination clothing), including respiratory protection; engineering controls; and associated issues of work management, planning, scheduling and control, and program management. Site staff benchmarked similar practices at two commercial nuclear power plants and two other DOE sites in the process of self-evaluation of Fernald radiological practices. It is noteworthy that a Fernald line manager was assigned lead responsibility to manage the study.

In the process of benchmarking, a representative of the Electric Power Research Institute became involved because of the high potential for applicability of the results of the study to the commercial nuclear industry. This person had conducted time-motion, work efficiency studies of workers in personal protective equipment and respirators for the Institute. A follow-on study of worker efficiency and physiological stress effects of wearing single or double sets of protective equipment and respirators is being planned, using Fernald as a realworld site for high temperature and humidity during summer months. This study is expected to be based on actual observations of Fernald workers in deactivation and decommissioning activities planned for 1997.

It is important to note that this optimization study focused on potential reductions in the total risk to the workforce. It is not a budget

tool and should not be viewed as a basis for budget reductions because it is as yet undecided whether all the recommendations in the report will be implemented; however, as parts of the study are implemented and the total risk to the workforce is reduced, corresponding cost savings and avoidances should be realized. The study team estimated cost savings and cost avoidance in excess of \$100M over the remaining life of the Fernald Environmental Management Project through changes in practices associated with the areas evaluated in the study. Copies of this report will be delivered to members of the DOE Radiological Control Coordination Committee.

EH Mentors dedicated more than 1 week a month from September 1996 through February 1997 in support of this study. As an indication of the importance and significance of the completed Fernald Radiological Control Optimization Study, the DOE Fernald Radiological Control Manager and EH-3 have been invited to present details at a conference of commercial nuclear power plant radiological control managers in June 1997, sponsored by the Nuclear Energy Institute. For more information, contact Pete Darnell at the DOE Fernald Area Office (513-648-3182 or peter.darnell@fernald.gov) or Ed Blackwood at DOE Headquarters (301-903-0120 or ed.blackwood@eh.doe.gov).Ë

RICHLAND

EH Radiological Control Mentors assisted the RL Office of Training in the development and classroom performance of Radiological Control Training for DOE personnel in several RL Assistant Manager organizations. The Training staff has aggressively pursued support for this critical training effort from the necessary training personnel, developed training materials, and gained the support and participation of

RL operations and program organizations. The training being conducted is professional, thorough, helpful to participants, and appropriate for the specific organizations and level of staff personnel involved. Feedback from DOE staff who have completed the course to date has been very positive. The EH Mentor presented classroom segments on lessons in areas of development of the DOE Radiological Control Manual, background discussions regarding radiological control in DOE and the commercial industry, and specific lessons learned through experience.

An EH Radiological Control Mentor assisted RL's training office in a followup to a July 1996 assessment of the contractor's Radiological Worker Training Program. In addition, an EH Radiological Control Mentor assisted Training staff in assessing the Pacific Northwest National Laboratory's Radiological Worker Training Program and provided overviews and briefings to DOE and contractor personnel on the progress, methodology, and results of the Radiological Control Optimization Study at Fernald, described below.

Assistance continued with RL Safety and Radiological Control staff, specifically the ongoing effectiveness of the Safety Division and Radiological Control Manager development. This included weekly one-on-one work sessions with the RL Radiological Control Manager and reviews of several specific issues on the effectiveness with which they were handled. Examinations involved overall site improvement issues and several questions of interpretation.

During multiple trips to Hanford, EH Radiological Control Mentors and the Director, Radiological Protection (EH–3), continued to provide assistance to the Hanford Manager of Analytical Services and laboratory management at the 222'S Laboratory. Efforts focused

on improvements in the quality of performance measures, improvement plans, and the path forward for the organization. Mentoring also involved improvements in organizational effectiveness of the laboratory and professional development of staff in working with the Manager of Analytical Services and the Laboratory quality assurance manager.

EH Mentors continued to coach the manager of Hanford central site training, providing advice on resolution of longstanding training issues, specifically in regard to consistency and standardization, with emphasis on the financial benefits of standardization

When onsite, EH Radiological Control Mentors and the Director of Radiological Protection attended weekly meetings of the Hanford integrating contractor Radiological Center of Expertise, whose members comprise the Radiological Control Managers of all Hanford contractors and facilities. Similar to the Ohio Radiological Forum, this Hanford Center is one of the best for raising, discussing, and resolving sitewide radiological issues in a professional manner. Mentors contributed external expert opinions on current Hanford radiological issues, based on broad knowledge of similar issues at other DOE sites and current commercial nuclear industry experience. Mentors also worked with individual facility radiological control managers on resolving radiological issues.

At the Bechtel Hanford Environmental Restoration Contract, an EH Radiological Control Mentor and the Director of Radiological Protection evaluated radiological engineering initiatives and met with contractor management to discuss the current status of and improvements in radiological control. Although the contract continues to face new challenges expected in any remediation effort, feedback from a recent Defense Nuclear Facilities Safety

Board staff visit was positive, based on newly added staff expertise and qualifications and attention to nuclear and radiological considerations associated with remediation activities. Ë

ROCKY FLATS

An EH Radiological Control Mentor assisted the DOE Rocky Flats Field Office, Rocky Mountain Remediation Services, and Safe Sites of Colorado during four week-long visits to the site. Emphasis was on common issues and the workings of the integrating and management contract regarding the site documentation system and the scope of procedures controlled by the contractor. The EH Mentor pointed out operations and procedures that should be controlled sitewide, including work control, conduct of operations (e.g., lockout, tagout), and basic training. Specifically, the Mentor reinforced the continuing need to maintain the site-level "bookshelf" of documents such as the Integrated Work Control Program Manual, and the Conduct of Operations Manual, which had been dispersed, lost in contract transition, or ignored because site personnel believed they were no longer in force. This resulted in many contractor employees believing that they had to issue their own control documents, which also led to unnecessary revisions of the previous site documents.Ë

OHIO RADIOLOGICAL FORUM

The EH–3 Director of Radiological Protection continued to assist and advise the Ohio Radiological Forum during its quarterly meeting. This forum consists of DOE radiological advisers from the Ohio Field Office and its five sites. Meetings are held in conjunction with meetings of contractor radiological control managers from the five sites, and include a joint session. The forum is a means to enhance coordination, communication, consistency, and

standardization of radiological practices and to promote sharing of special expertise and capabilities among the sites. The outside perspectives of the EH Mentor have been valuable to the forum. Ë

ASBESTOS SAFETY (IDAHO)

During the first quarter of 1997, INEEL's Sitewide Asbestos Program EWP teams developed several enhancements to Idaho's current asbestos operations and maintenance activities. Addressing work planning and performance issues similar to those being addressed by other EWP initiatives at INEEL, EWP efforts specifically addressing asbestos management program activities have been established to consistently identify asbestos hazards and prevent accidental exposure of workers to asbestos; establish uniform, sitewide asbestos operations and maintenance work planning and performance requirements to ensure worker safety, regulatory conformance, and work efficiency; and reduce the costs of and time needed to perform asbestos operations and maintenance activities.

As described below, enhancements identified by the contractor's asbestos program manager and his EWP teams will be implemented through demonstration projects or sitewide application during the next quarter.

One enhancement involves stamping flanges where gaskets have been replaced to indicate that asbestos-free materials have been used. As there is no existing system to identify where asbestos-free gaskets are in place, current work practices assume that asbestos-containing gaskets are present at all of the thousands of flanges throughout Idaho. While some gaskets may not be replaced for a number of years, more than 100 gaskets are replaced annually (i.e., during boiler inspections). By eliminating the assumption that

asbestos-containing material is present and the additional work requirements associated with this assumption, the costs avoided (based only on marking boiler system flanges) are more than \$20,000 in the first year and each subsequent year.

Another EWP enhancement involved the contractor asbestos management program staff evaluating existing inspection and sampling data for buildings constructed since 1980. Existing data was available for approximately 20 percent of the buildings constructed since 1981 (representing about 25 percent of the total square footage of these buildings). While the data indicated that asbestos-containing materials were present, no materials containing friable asbestos were found. Therefore, the EWP teams recommended that these buildings be posted with the list of asbestos-containing materials found in the data review and that the notices and records indicate that a "due diligence" review found no materials containing friable asbestos. While asbestos surveys may be performed in the buildings on a limited, case-by-case basis, this data review and the subsequent postings eliminates or drastically reduces the need to conduct asbestos surveys. The potential benefit associated with this enhancement over the next 2 to 3 years is approximately one-half million dollars (based on avoiding survey costs of about 31 cents per square foot for 1.6 million square feet of building space).

Another enhancement involved developing procedures enabling a "competent person" (as defined in the asbestos regulations) to perform small-scale, short-duration tasks. This process significantly reduces the time and labor required to plan certain asbestos operations and maintenance activities and eliminates the need to have two-person teams perform certain activities. The enhancement developed by the EWP teams includes an abbreviated (i.e., one-

page) work authorization, approval, and reporting form and a series of job safety analyses to cover the eight types of small-scale, short-duration tasks identified. Similar to the skill-of-craft and job-hazard-analyses products developed in EWP projects at Idaho's Chemical Processing Plant and at other sites, the small-scale, short-duration task job safety analyses are preapproved standards that clearly and succinctly communicate work requirements and match the rigor of work planning and performance with work complexity and risk. This benefits the site by controlling work cost and schedule and helps ensure worker safety.

As another enhancement, an asbestos planning decision tree will be used to ensure that asbestos hazards are consistently and uniformly recognized and that all available information (e.g., inspection reports that confirm or refute the presence of asbestos-containing materials or the date of building construction) is considered in planning asbestos work. The decision tree is designed as an integral component of the job requirements checklist being developed for Idaho's sitewide EWP program.

Finally, as part of its EWP efforts, Idaho has begun using an automated asbestos information management system to store and retrieve relevant information for all buildings that have been inspected, surveyed, or otherwise evaluated for the presence of asbestos. The decision tree and computer system enhancements will maximize worker protection by ensuring that working staff and work planners consider and are consistently provided updated information on the asbestos hazards, they may face. EWP team members expect that these enhancements will serve to prevent the 6 to 12 events each year (based on recent activities) in which asbestos-containing materials are found after work has begun. In these cases, workers may be unnecessarily exposed to asbestos hazards or face work delays of several hours

or days due to the unanticipated presence of asbestos.

Members of the EWP teams also expect that these two enhancements will help to prevent an unknown number of events in which asbestos-containing materials are found but appropriate action is not taken. For example, members of the EWP teams commented that they have observed fire doors (with a core of asbestos-containing materials) that have been drilled or cut without notification of asbestos management staff. The success of these enhancements will be validated by a reduction in the number of events in which asbestos-containing materials are found after work has begun. This measurement will be determined by the asbestos program manager, who will periodically survey asbestos workers and work planners.

An interim report providing full details on these and other asbestos program EWP enhancements will be issued in April 1997. This report is being issued before completion of full-scale implementation so that the enhancements and their potential benefits can be shared with other sites **E**

MEDICAL MONITORING/ SURVEILLANCE (RICHLAND)

The Hanford Occupational Health Process is designed to take a risk-based and preventive approach to occupational health. One of the primary objectives is to place employees in proper medical programs based on risk, rather than on administrative decision. To achieve the risk-based approach, an automated tool, the employee job task analysis, has been completed to compile employee job requirements, hazards, and exposures. This base of information enables informed decisions regarding the types of medical programs that are appropriate. It also provides important input to deci-

sions involving training, exposure assessment, Americans with Disabilities Act considerations, and other occupational health issues.

In 1996, EWP demonstrations assisted the Hanford Occupational Health Process Team led by RL Quality, Safety and Health in developing, demonstrating, and refining the employee job task analysis. Through this effort, it was apparent that this process has great potential to improve both the quality and cost effectiveness of occupational health processes.

The RL Manager directed all Hanford prime contractors to implement this process. With a new managing and integrating contractor assuming operations in October 1996, RL incorporated the Occupational Health Process into the Project Hanford Management Contractor's performance measurements and established an incentive-based performance agreement for its implementation.

Hanford led the final development of the employee job task analysis tool and process. It also supported implementation for its own activities as well as for its subcontractor team and for other Hanford prime contractors.

Beginning in December 1996 and continuing through the first quarter of Calendar Year 1997, Hanford began and continued implementation of the Hanford Occupational Health The employee job task analysis computer program was loaded on the network for sitewide access by line managers. Hanford Environment, Safety and Health provided training to line managers and industrial hygienists involved in the completion process. Line managers then began the completion process for all employees. This training and completion process will extend through June 1997, the goal being to complete job task analyses for all employees of the Project Hanford Management Contractor and its subcontractors by

June 30. Similar completion goals have been established for other Hanford prime contractors as well as RL.

Concurrently with the job task analysis completion process, several other activities are underway to ensure timely and accurate implementation of Hanford's occupational health process. These activities include conducting quality reviews, communicating with interested parties such as bargaining units, completing the medical contractor's automated management system, and ensuring that facility access requirements reflect the risk-based approach compatible with Hanford's process.

When fully implemented, Hanford's occupational health process should serve as a model approach for the DOE complex, optimizing both quality of service and cost effectiveness by taking a risk-based and preventive approach. **Ë**

LEADERSHIP TRAINING (RICHLAND)

EH's Leadership Development Program has continued to expand at Richland (RL). The program is designed to provide gradual skills development and behavioral changes that will enable participants to become more effective in their leadership and more efficient in their interactions with others. The program builds on the knowledge and experience of the participants while focusing on specific behaviors and processes that lead to success in communication, delegation, consistency, time and detail management, conflict management, and accountability.

The Hanford Analytical Services Laboratory and Plutonium Finishing Plant participated in pilot sessions of the Leadership Development Program, which were completed in November and January respectively. Four groups have completed the program. Participants in the pilot sessions were engineers, group leaders, first line supervisors and first line managers. A survey of participants taken at the end of the sessions showed an average 40 percent improvement in leadership skills and 38 percent increase in efficiency. The increased efficiency translates to a recovery of 3 hours per person per day in discretionary time, an improvement particularly important to participants who are being asked to improve performance while reducing costs.

Currently, six groups are participating in the Leadership Development Program at Hanford. Two are at the Hanford Analytical Services Laboratory. Two more were initiated in response to a request by a reengineered maintenance group at Hanford's B-Plant. The maintenance group includes craft, exempt, and non-exempt individuals.

The fifth group participating in the program is RL. This group comprises Program Managers and Facility Representatives with program and oversight responsibility for activities in the 200 Areas of Hanford. The program is being jointly funded by the Transition Program Division and the Site Operations Division of RL. The division managers see this as an opportunity to improve communications between their respective organizations, as well as with the various contractors working in Hanford's 200 Areas. Progress on these sessions will be provided in the next update report.

The sixth group is the Plutonium Finishing Plant, which has expanded its commitment to self-improvement by applying the leadership development approach to building a cohesive senior management group. The manager requested the program to help meet organizational improvement objectives. This group is approximately halfway through the program, having completed four sessions. The senior management team has received feedback from

workers that behavioral changes are being observed and appreciated. In addition, participants note improvement in the effectiveness of their team's interactions.

During March, participants in the pilot leadership development sessions held for the Hanford Analytical Services Laboratory were surveyed to measure retention of the skills and behaviors they developed during the sessions. Except for a slight decline in their consistency, the participants are maintaining the level of expertise they developed while in the program. In particular, they show continued strong growth in time-management and conflictmanagement skills.

It is a fundamental premise of the Leadership Development Program that improving participants' ability to deal effectively in resolving conflict will increase their efficiency and job satisfaction. In addition, the Leadership Development Program maintains ownership for learning and personal development with the participants. Consequently, personal growth continues after the program has been completed.

The survey also shows that all participants believe they are more efficient than before completing the Leadership Development Program. Seventy-two percent indicate that their efficiency is unchanged or continuing to improve since completing the sessions. The average efficiency gain is 43 percent over preprogram levels. This translates into more than 3 hours per day per person of recovered discretionary time. Participants indicate that they are using this additional time to "walk the spaces" and strengthen their working relationships.

While many training programs provide immediate improvements in performance, the effects of training often drops off dramatically with

time. With respect to this phenomenon, initial data from the pilot sessions are very positive. The fact that 75 percent of the participants are continuing to set personal improvement goals may explain the high skill-retention rate and the continuance of learned behaviors. A similar survey will be completed after approximately 6 months to determine the long-term effects of the program on individual performance.

In addition to the fact that individuals are maintaining their skills and efficiency, 75 percent indicate that they experience less stress today than before attending the program. This is a measure of their ability to deal effectively with their individual circumstances. From the survey data, it is clear that establishing personal goals and maintaining lower stress levels are linked.

All participants in the pilot sessions indicate that they are better leaders today than before they attended the sessions. They also continue to believe that the behaviors learned are for the long term.

Analysis of the survey results led to the conclusions that (1) participants continue to use leadership development skills after 3 months; (2) leadership skills development continues after the program ends; (3) relationships built during the program are important to participants; (4) behaviors developed during the program are for the long term; (5) participants continue to set goals for personal development; (6) participants continue to feel less stress than before attending the program (7) efficiency improvements, which result in an average savings of 3 hours per day per person, are sustained well after completion of the program.

From the survey results, it is clear that the process used in the Leadership Development

Program is effective at improving the interpersonal, supervisory, and management skills needed to deal effectively with the dynamic environment faced by DOE contractors during mission transition. The Leadership Development Program augments other mentoring efforts by providing fundamental skills and behaviors needed to implement lasting cultural and programmatic change.

Success of the Leadership Development Program has demonstrated the program's ability to enhance the interpersonal, supervisory, and management skills needed to implement desired changes in technical programs such as Enhanced Work Planning effectively. E

SELF-ASSESSMENT

During the first quarter of 1997, efforts continued to support improvements in self-assessment programs and processes within DOE. EH began working with the Ohio Field Office (OH), the Idaho Operations Office (ID), and the Richland Operations Office (RL) to define the scope, schedule, and deliverables for a series of field demonstration projects that will test the effectiveness of specific improvements in self-assessment programs. Each effort will focus on different approaches to increase worker involvement in completing self-assessment activities and in ensuring effective use of results from self-assessment activities to achieve continuous improvement. In addition, EH staff members met with representatives from the Department Standards Committee to discuss how to improve the linkage between the self-assessment initiative and the Department's ongoing efforts to implement Integrated Safety Management systems.

At OH, discussions are in progress regarding demonstration projects at Mound and Fernald. The proposed demonstration at Fernald would focus on current efforts to improve the ability of managers and workers to conduct safety observations to identify and correct potentially unsafe behaviors or conditions before they lead to an accident or operational event. Two separate efforts are under consideration at the Mound Plant. The first potential project involves working with the current site contractor to develop an improved self-assessment program that promotes worker involvement in all its aspects. The second project involves working with the DOE Miamisburg Area Office to strengthen processes for overseeing contractor activities at Mound.

Discussions with ID have focused on improving employee involvement in completing various self-assessment activities in conjunction with an ongoing effort to upgrade issues management at the site. The site contractor is implementing a new issues management system, to improve issue tracking and provide enhanced methods to collect potential issues and provide current status to users. As part of implementing and testing the new system, the site contractor and ID will work with EH to develop improved methods for collecting self-assessment results from employees and entering this input into Idaho's new issues management system.

Discussions with RL and the integrating contractor relate to strengthening the ability of employees to recognize potential hazards as well as ways to improve safety and efficiency. Other possible areas for assistance include improving systems and processes to report and resolve employee input. Discussions are under way regarding testing improvements at one or more facilities at Hanford site to quantify the benefits from each improvement.

EH staff met with the Department Standards Committee to discuss results of the benchmarking study on self-assessment and future directions for the initiative. There was general agreement that improving the effectiveness of self-assessment is an essential element in implementing Integrated Safety Management systems. In addition, the EH initiative supports parallel efforts to strengthen DOE line oversight of environment, safety, and health based on strong contractor self-assessment programs. EH committed to work with the Department Standards Committee during demonstration projects in the field and to share information on successes and lessons learned as the information becomes available. Ë